

REMARKS/ARGUMENTS

In the Office Action mailed October 3, 2005, claims 10, 11, 15, 16, 17 and 18 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,511,971 to Benz *et al.* (hereinafter referred to “Benz”) and claims 1-3, 5-11, 13-18 and 20 were rejected under 35 U.S.C. § 103(a) as being obvious over Benz in view of U.S. Patent No. 5,002,484 to Lofton *et al.* (hereinafter referred to as “Lofton”) and U.S. Patent No. 5,539,638 to Keeler *et al.* (hereinafter referred to as “Keeler”). Claims 10, 18 and 20 have been amended, claims 21-22 have been added to more clearly define the invention and claim 13 has been cancelled. Support for the amendments is found in the specification. No new matter is added.

Applicant has thoroughly reviewed the outstanding Office Action, including the Examiner’s remarks and references cited therein. The following remarks and amendments are believed to be fully responsive to the Office Action. After entering the amendment, the claims currently pending in this application will be claims 1-3, 5-11, 14-18 and 20-22. All of the pending claims at issue are believed to be patentable over the cited references.

CLAIM REJECTIONS UNDER 35 U.S.C. § 102

The Office Action rejected claims 10, 11 and 15-18 under 35 U.S.C. § 102(b) as being anticipated by Benz. Applicant respectfully traverses these rejections.

“The claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described in a single prior art reference.” *Verdegaal Bros v. Union Oil Co. of California*, 814 F.2d 628, 631. (Fed.Cir. 1987); MPEP § 2131.

With respect to claim 10, Benz does not teach or suggest every aspect of Applicant’s independent claim 10 and its dependent claims 11 and 14-17. For example, claim 10 and its dependent claims recite a combination including, in part, “means for controlling the burner operably connected to the system controlling means, wherein the system controlling means is

further configured to send a signal to the burner controlling means to shut down the burner when the NO_x emissions in the exhausting means are at or above a predetermined level.”

In contrast, Benz discloses a burner modification that may shut down a boiler to maintain a stable flame in response to pressure and acceleration transducer signals. (*See* Benz, col.5, ll. 53-56.) To the extent that Benz discloses shutting down a boiler, Benz limits its discussion to flame stability. To the extent Benz discloses shutting down a boiler, Benz limits its discussion to flame stability. Benz does not disclose “controlling means to shut down the burner when the NO_x emissions in the exhausting means are at or above a predetermined level.”

Thus, Benz does not teach or suggest a combination including all the elements of Applicant’s independent claim 10 and its dependent claims. That is to say, each and every element as set forth in claim 10 and its dependent claims is not found in a single prior art reference. Therefore, at least for these reasons, Applicant respectfully requests that the rejections of claim 10 and its dependent claims 11 and 15-17 under 35 U.S.C. § 102 as being anticipated by Benz be withdrawn.

With respect to claim 18, Benz does not teach or suggest every aspect of Applicant’s independent claim 18. For example, independent claim 18 recites a combination including “shutting down the burner when the NO_x emissions are at or above a predetermined level.”

In contrast, as explained above, Benz discloses a burner modification that may shut down the boiler to maintain a stable flame in response to pressure and acceleration transducers signals. Benz does not disclose a method of reducing NO_x emissions that includes “shutting down the burner when the NO_x emissions are at or above a predetermined level.”

Thus, Benz does not teach or suggest a combination including all the elements of Applicant’s independent claim 18. That is to say, each and every element as set forth in claim 18 is not found in a single prior art reference. Therefore, at least for these reasons, Applicant respectfully requests that the rejections of claim 18 under 35 U.S.C. § 102 as being anticipated by Benz be withdrawn.

CLAIM REJECTIONS UNDER 35 U.S.C. § 103

Claims 1-3, 5-11, 13-18 and 20 were rejected under 35 U.S.C. § 103(a) as being obvious over Benz in view of Lofton and Keeler. Applicant respectfully traverses these rejections.

The Examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. MPEP § 2142. In order to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves, or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all of the claimed limitations. MPEP § 2142; *see also* MPEP 2143. In light of the following arguments, the combined references do not teach or suggest all of the claim limitations of the present invention.

With regard to claims 1-3 and 5-9, Benz in view of Lofton and Keeler does not teach or suggest every aspect of Applicant's independent claim 1 and its dependent claims 2, 3 and 5-9. For example, claim 1 and its dependent claims recite a combination including, in part, "a burner controller operably connected to the system controller, wherein the system controller sends a signal to the burner controller to shut down the burner when the NO_x emissions in the exhaust conduit are at or above a first predetermined level."

As discussed above, Benz does not teach or suggest a combination including a "burner controller to shut down the burner when the NO_x emissions in the exhaust conduit are at or above a first predetermined level." Furthermore, neither Lofton nor Keeler cures the insufficiencies of Benz.

Lofton discloses "a system for combustion of hydrocarbon fuel which monitors the amount of oxygen in the combustion air." (*See* Lofton, col. 3, ll. 16-19.) The system of Lofton may automatically shut down when an excessively low oxygen concentration is sensed,

indicating substantial incomplete combustion. (*See* Lofton, col. 7, ll. 25-30.) However, an excessively low oxygen concentration is not indicative of an undesirable level of NO_x, as suggested in the Office Action. (*See* Office Action, p. 6.) As explained in Lofton, “insufficient oxygen produces incomplete combustion which increases the concentration of carbon monoxide and other undesirable pollutants and potentially destabilizes the combustion reaction.” (*See* Lofton, col. 2, ll. 39-42.)

On the other hand, “too much oxygen and the reaction temperature, and thereby the NO_x concentration within the combustion products, substantially increases.” Thus, shutting down in response to excessively low oxygen is not the same as “shut[ting] down the burner when the NO_x emissions in the exhaust conduit is at or above a first predetermined level.” (*See* Lofton, col. 2, ll. 36-38.)

In addition, Keeler discloses a method for monitoring emissions in an internal combustion engine. (*See* Keeler, col. 2, ll. 17-21.) Keeler discloses that a system may be shut down if the predicted NO_x level is outside of acceptable limits. (*See* Keeler, col. 2, ll. 2-4; col. 9, ll. 27-30.) However, Keeler does not disclose a controller that “shut[s] down the burner when the NO_x emissions in the exhaust conduit are at or above a first predetermined level.” Instead, Keeler discloses only a manual shutdown, which is not the same as automated shutdown.

Accordingly, Benz, Lofton and Keeler, alone or in combination, fail to teach or suggest a combination including all the elements of Applicant’s independent claim 1 and its dependent claims 2-3 and 5-9. Therefore, at least for these reasons, Applicant respectfully requests that the rejections of claim 1 and its dependent claims 2-3 and 5-9 under 35 U.S.C. § 103 as being obvious over Benz in view of Lofton and Keeler be withdrawn.

With regard to claims 10, 11 and 13-17, Benz in view of Lofton and Keeler does not teach or suggest every aspect of Applicant’s independent claim 10 and its dependent claims 11 and 13-17. For example, claim 10 and its independent claims recite a combination including “means for controlling the burner operably connected to the system controlling means, wherein

the system controlling means is further configured to send a signal to the burner controlling means to shut down the burner when the NOx emissions in the exhausting means are at or above a predetermined level.”

As discussed above, neither Lofton nor Keeler cures the insufficiencies of Benz. That is, neither Lofton nor Keeler discloses “controlling means to shut down the burner when the NOx emissions in the exhausting means are at or above a predetermined level.”

Accordingly, Benz in view of Lofton and Keeler, alone or in combination, fail to teach or suggest a combination including all the elements of Applicant’s independent claim 10 and its dependent claims 11 and 13-17. Therefore, at least for these reasons, Applicant respectfully requests that the rejections of claim 10 and its dependent claims 11 and 13-17 under 35 U.S.C. § 103 as being obvious over Benz in view of Lofton and Keeler be withdrawn.

With regard to claims 18 and 20, Benz in view of Lofton and Keeler does not teach or suggest every aspect of Applicant’s independent claim 18 and its dependent claim 20. For example, claim 18 and its dependent claims 20-22 recite a combination including “automatically shutting down the burner when the NOx emissions are at or above a predetermined level.”

As discussed above, neither Lofton nor Keeler cures the insufficiencies of Benz. That is, neither Lofton nor Keeler discloses “automatically shutting down the burner when the NOx emissions are at or above a predetermined level.”

Accordingly, Benz in view of Lofton and Keeler, alone or in combination, fail to teach or suggest a combination including all of the elements of Applicant’s independent claim 18 and its dependent claims 20-22. Therefore, at least for these reasons, Applicant respectfully requests that the rejections of claim 18 and its dependent claim 20 under 35 U.S.C. § 103 as being obvious over Benz in view of Lofton and Keeler be withdrawn.

CONCLUSION

In view of the foregoing remarks, the applicant respectfully requests that all the objections and rejections to the claims be removed and that the claims pass to allowance. If, for any reason, the Examiner disagrees, please call the undersigned attorney at 202-861-1567 in an effort to resolve any matter still outstanding before issuing another action. The undersigned attorney is confident that any issue which might remain can readily be worked out by telephone.

In the event this paper is not timely filed, applicant petitions for an appropriate extension of time. Please charge any fee deficiencies or credit any overpayments to Deposit Account No. 50-2036.

Respectfully submitted,

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